

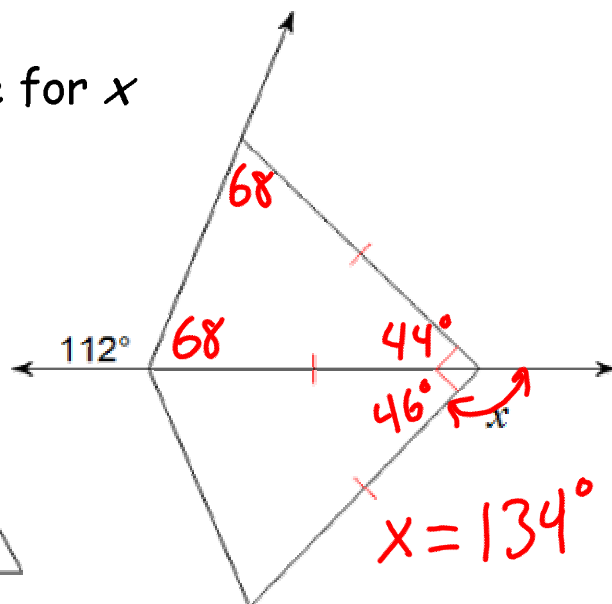
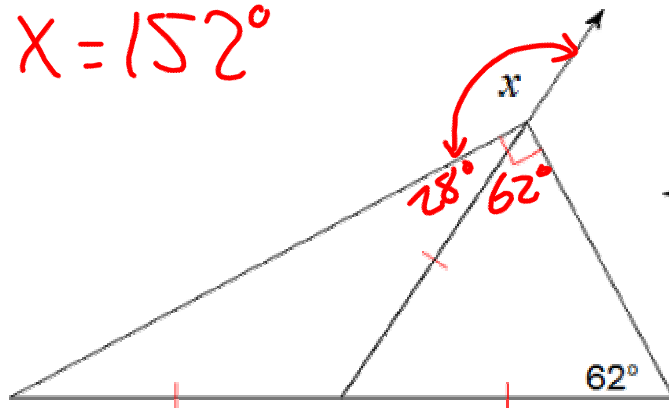
## 10/29/13 Agenda

- Warm Up
- Review Homework - Worksheet 3
  - Isosceles & Equilateral Triangles
- Section 4.2 - Congruent Triangles
- Start Homework
  - Worksheet 4 - Congruent Triangles
- **Reminder - Remediation Packet due this Friday (11/01)**

Homework out!

Warm Up: Find the value for  $x$

$$x = 152^\circ$$



$$x = 134^\circ$$

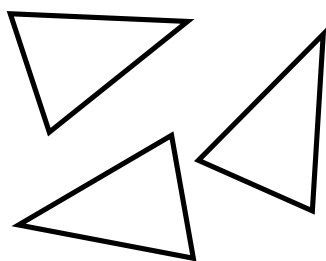
## Section 4.2 - Congruent Triangles

## Target 4D

**Goal:** Write a congruency statement and use it to identify congruent parts of triangles.

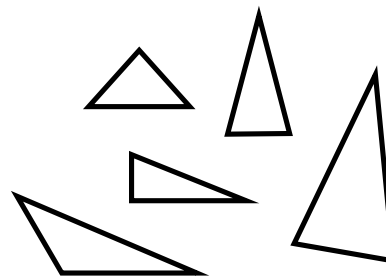
**Definition:** Two geometric figures are congruent if they have the exact same size and shape.

Congruent



same size & shape

Not Congruent



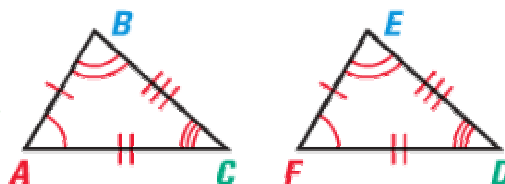
different size or shape

## Section 4.2 - Congruent Triangles

## Target 4D

In congruent figures, corresponding parts are congruent. In a triangle, this means we will have 6 parts that are congruent.

$$\triangle ABC \cong \triangle FED$$



3 PAIR  $\angle$ s

$$\angle A \cong \angle F$$

$$\angle B \cong \angle E$$

$$\angle C \cong \angle D$$

3 PAIR SIDES

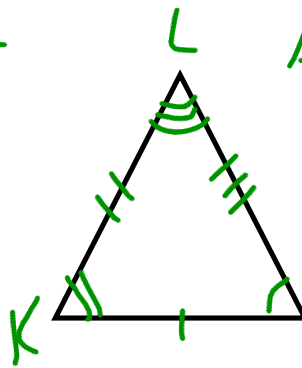
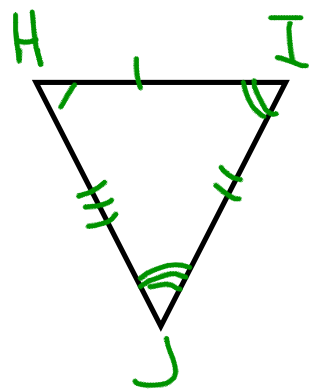
$$\overline{AB} \cong \overline{FE}$$

$$\overline{BC} \cong \overline{ED}$$

$$\overline{CA} \cong \overline{DF}$$

When writing a congruency statement:

**ORDER MATTERS!!!**

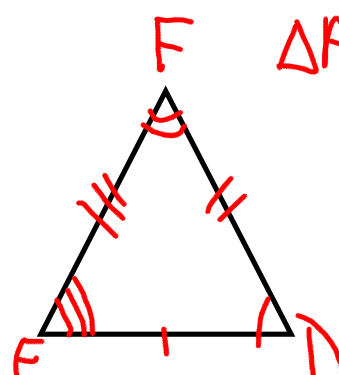
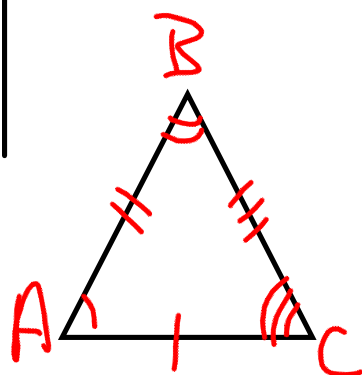


$$\triangle HIJ \cong \triangle MKL$$

Arrows indicate the correspondence: H to M (red), I to K (blue), J to L (blue).

$$\triangle IJH \cong \triangle KLM$$

$$\triangle JHI \cong \triangle LMK$$



$$\triangle ABC \cong \triangle DFE$$

$$\triangle ACB \cong \triangle DEF$$

$$\triangle BAC \cong \triangle FDE$$

$$\triangle BCA \cong \triangle FED$$

## Section 4.2 - Congruent Triangles

## Target 4D

Write a congruence statement for the triangles. Identify all pairs of congruent corresponding parts.

$$\triangle K LJ \cong \triangle S RT$$

$$\angle K \cong \angle S$$

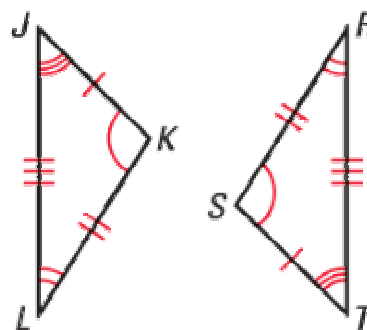
$$\angle L \cong \angle R$$

$$\angle J \cong \angle T$$

$$\overline{JK} \cong \overline{TS}$$

$$\overline{LK} \cong \overline{SR}$$

$$\overline{JL} \cong \overline{RT}$$

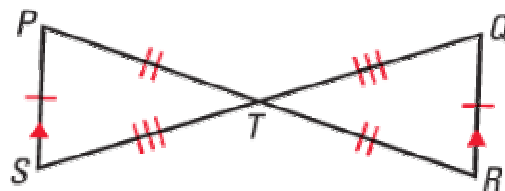


## Section 4.2 - Congruent Triangles

## Target 4D

Show that  $\triangle PTS \cong \triangle RTQ$ .

(must show all 6 parts to be congruent)



why?

$$\angle PTS \cong \angle RTQ \Rightarrow \text{VERT. } \angle s$$

$$\angle S \cong \angle Q \Rightarrow \text{ALT INT}$$

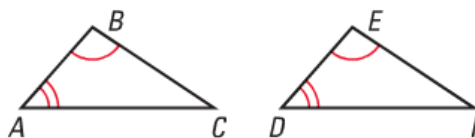
$$\angle P \cong \angle R \Rightarrow \text{ALT INT}$$

Some Theorems you may find useful:

**THEOREM***For Your Notebook***THEOREM 4.3** Third Angles Theorem

If two angles of one triangle are congruent to two angles of another triangle, then the third angles are also congruent.

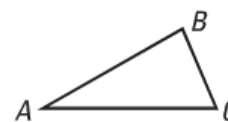
*Proof:* Ex. 28, p. 230



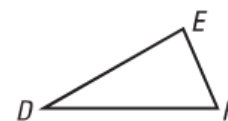
If  $\angle A \cong \angle D$ , and  $\angle B \cong \angle E$ , then  $\angle C \cong \angle F$ .

**THEOREM***For Your Notebook***THEOREM 4.4** Properties of Congruent Triangles**Reflexive Property of Congruent Triangles**

For any triangle  $ABC$ ,  $\triangle ABC \cong \triangle ABC$ .

**Symmetric Property of Congruent Triangles**

If  $\triangle ABC \cong \triangle DEF$ , then  $\triangle DEF \cong \triangle ABC$ .

**Transitive Property of Congruent Triangles**

If  $\triangle ABC \cong \triangle DEF$  and  $\triangle DEF \cong \triangle JKL$ , then  $\triangle ABC \cong \triangle JKL$ .

